

The description of the male *Pseudorictularia disparilis*
(Irwin-Smith, 1922)
(Nematoda, Physalopteridae)
from Northern Australia

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Résumé. — Le mâle de *Pseudorictularia disparilis* (Irwin-Smith, 1922) est décrit chez trois espèces de Grenouilles : *Litoria inermis* (Peters), *L. nigrofrenata* (Günther) et *Rana daemeli* (Steindachner), et chez le Marsupial *Dasyurus hallucatus* (Gould). Les mensurations de 28 femelles sont données.

Abstract. — The male *Pseudorictularia disparilis* (Irwin-Smith, 1922) is described from 3 species of frogs; *Litoria inermis* (Peters), *L. nigrofrenata* (Günther) and *Rana daemeli* (Steindachner), and the northern native cat *Dasyurus hallucatus* (Gould). Additional measurements from 28 female worms are also presented.

INTRODUCTION

IRWIN-SMITH (1922a) described worms from the alimentary tract of a skink (*Hinula* sp.) which she named *Rictularia disparilis*. Later (IRWIN-SMITH, 1922b), she identified the skink as *Lygosoma entrecasteauxii*. DOLLFUS and DESPORTES (1945) reviewed the genus *Rictularia* and erected a monotypic genus *Pseudorictularia* based on IRWIN-SMITH's species. YAMAGUTI (1961) included this genus within the family Rictulariidae. But CHABAUD (1975) commented that while it seemed to belong in the Physalopteridae, it was not sufficiently well-known to classify.

Recently female *P. disparilis* were found in association with males in 3 species of frogs and in a native cat. As IRWIN-SMITH's description was based on only 2 specimens, the opportunity was taken to obtain additional measurements from 28 females and to describe the males.

MATERIALS AND METHODS

The host animals were loaned by the Queensland Museum. Four of 30 *Rana daemeli* (Steindachner) from El Arish were infected, as were 1 of 4 from Port Douglas and 3 of 70

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from Cooktown; 11 of 19 *Litoria nigrofrenata* (Günther) from Cooktown, a single specimen from Tozer Gap and 1 of 4 *Litoria inermis* from Cooktown, all in Queensland. A single *Dasyurus hallucatus* from Adelaide River, Northern Territory, was also infected.

Five *L. inermis* from Wakooka were uninfected as were 1 *L. nigrofrenata* from Cape Melville; 1 from Iron Range; 1 from Coen and 2 from Cape York and 1 *D. hallucatus* from Bamaga, all in Queensland, and 1 *D. hallucatus* from unknown locality.

All specimens were located in the stomach.

All worms were cleared and mounted in lactophenol.

DESCRIPTION OF THE MALE

The body is opaque when preserved, widest at one third length from the head, tapering slowly to the head, while maintaining width posteriorly to the caudal alae (fig. 1A).

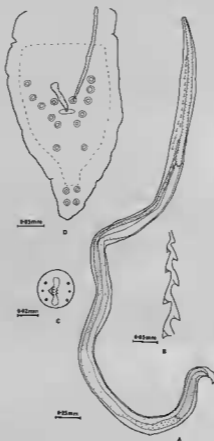


FIG. 1. — A, schematic diagram of male *Pseudorictularia disparilis*; B, detail of cuticular spines of male; C, en face view of male; D, posterior of male showing arrangement of papillae and spicules.

Mean body length 4.70 mm, with a width of 0.16 mm at the pharyngeal-intestinal junction. The cuticle is transversely striated at $1.5\ \mu\text{m}$ intervals, except for areas covered by spines. The left side is ornamented by spines extending in an asymmetric row, with the spines alternating in the direction in which they face (fig. 1B). The spines commence 0.35 mm from the anterior extremity and continue until 1.66 mm from the posterior; 238 spines in all in a specimen 5.36 mm long. The spines are mostly uniform in size but at both extremities they are slightly reduced, contrary to the females where spines at the extremities are reduced by one half (IRWIN-SMITH, 1922a). The spines are $21\ \mu\text{m}$ high, $21\ \mu\text{m}$ wide and $29\ \mu\text{m}$ from point to point of adjacent spines facing the same direction. The spines' anchor ridge, as described by IRWIN-SMITH (1922a), is present in the males but is not so prominent as in the females. The head consists of 2 lateral pseudolabia constricted from the body by a ridge of tissue, possibly the cervical collarette. Each pseudolabium has 2 papillae, dorsal and ventral with a median amphid. The right pseudolabium is armed with a stout, conical tooth $5\ \mu\text{m}$ high and $9\ \mu\text{m}$ wide at the base; it is typical of the phyllopterids. Internal to the tooth is a tripartite mound of tissue, with each summit crowned by a single denticle (fig. 1C). The denticle of the left pseudolabium has a structure similar to that of the right but without the external tooth, giving the lips an asymmetric appearance. The terminal mouth leads to a short, narrow, unarmed buccal capsule. The glandular pharynx expands markedly at the junction with the muscular portion. Thorn-like cervical papillae occur just anterior to the nerve ring. The oval excretory pore is posterior to the cervical papillae. The pharynx is protected by valves where it enters the intestine. The single testis widens to become the seminal vesicle which temporarily constricts to emerge as the vas deferens. The ductus ejaculens is demarcated by its darker colour from the vas deferens and terminates at the cloaca (fig. 1A). The caudal alae do not meet ventrally and terminate prior to the extremity, 0.08 mm before the base of a 0.08 mm mucronate tip. The surface is papillate (fig. 2). There are 9 pairs of papillae;

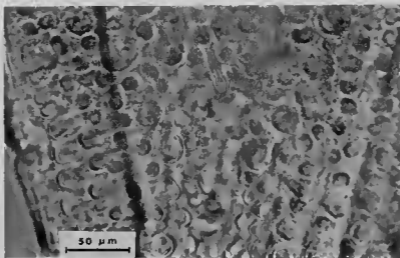


FIG. 2. — Showing papillate appearance of caudal alae.

4 pairs are preanal, 1 pair adanal, and the remainder postanal (fig. 1D). The first 3 external preanal pairs of papillae have hypodermal extensions making them pedunculate but not to the extent of the typical physalopterids. The spicules are unequal, with the left (0.215 mm) longer than the right (0.070 mm). Both spicules taper to points with the right spicule having a bulbous base.

Specimens have been deposited in the Queensland Museum (male G11808 and female G11809); the Australian Museum, Sydney; Muséum national d'Histoire naturelle, Paris (n° 389 HD); the South Australian Museum, Adelaide and the U.S. National Museum Helminthological Collection, Beltsville Parasitological Laboratory, Beltsville, Maryland, USA.

DISCUSSION

Due to the lack of a description of the male, *P. disparilis* (Irwin-Smith, 1922), the position of this taxon has been in doubt. The nematodes have been classified as *Rictularia disparilis* (Irwin-Smith, 1922a), as *Pseudorictularia disparilis* (Dollfus and Desportes, 1945); placed in the Physalopteridae by SKRJABIN, SCHIKHOBALOVA and SOBOLEV (1949); and lately in the Dogielinae (Physalopteridae) by SKRJABIN and SOBOLEV (1964).

The discovery of the male *P. disparilis* allows its definite taxonomic position to be determined. The suggested classification is: Order Spirurida; Family Physalopteridae; Subfamily Proleptinae; Tribe Thubunainea; because males have 3 pairs of pedunculate papillae, a buccal capsule is present; there is no ventral unification of caudal alae; the spicules are unequal; the papillate appearance of the ventral surface of the alae, the presence of the mucron tip to the tail; the asymmetrical lip dentition; females have the vulva near the pharyngeal-intestinal junction, and eggs are embryonated when deposited. (The hosts of *Thubunaea* are reptiles, the hosts of *Physalopteroides* are reptiles and amphibians, and *Pseudorictularia*'s hosts are reptiles, amphibians and mammals.)

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TABLE I. — Measurements of male and female *Pseudorictularia disparilis* (Irwin-Smith, 1922).

	MALE (6) (a) Range	FEMALE (28) Range
Body length (mm)	3.46-5.36	5.06-9.73
Body width (b) (mm)	0.13-0.20	0.13-0.33
Total pharynx length (mm)	0.80-1.50	0.90-2.60
Muscular pharynx length (mm)	0.13-0.26	0.13-0.33
Distance from head		

TABLE 1. — (Suite.)

	MALE (6) (a)	FEMALE (28)
	Range	Range
Cervical papillae (mm)	0.15-0.20	0.12-0.26
Nerve ring (mm)	0.15-0.19	0.07-0.26
Excretory pore (mm)	0.20-0.25	0.16-0.33
Caudal length		
(Cloaca to tip) (mm)	0.11-0.21	
Caudal alae length (mm)	0.20-0.43	
width (mm)	0.13-0.33	
Spicule length right (μ m)	62-130	
left (μ m)	116-330	
Spicule width right (μ m)	8-16	
left (μ m)	4.5-5.5	
Number of spines	68-226	122-178
Number of spines at vulva		12-26
Distance of vulva		
from head (mm)		0.53-1.30
Egg size		
length (μ m)		29-41
width (μ m)		19-29

(a), number of specimens examined in parentheses.

(b), width measured at pharyngeal-intestinal junction.

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